CARDIOVASCULAR MORTALITY AND OCCUPATIONAL EXPOSURE IN AN ALUMINUM COHORT

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Background and aims: Increased risk of cardiovascular mortality related to combustion-generated particulate matter (PM) in air pollution has become a major public health concern. Although occupational exposures to PM can be orders of magnitude higher than ambient levels, evidence regarding cardiovascular disease risk associated with workplace exposure to PM is scant.
Methods: We examined cardiovascular mortality from 1996 to 2008 in a cohort of over 11,700 aluminum workers which has been under observation for over a decade. Individual level exposure metrics for total PM and $PM_{2.5}$ are being developed for the cohort based on job histories and personal sampling results in smelters, refining and fabrication facilities.
Results: Initial analyses using broad classifications of plant type (smelter vs other) show no increased risk of all-cause mortality among those who worked in a smelter. Thirty percent of the deaths were due to cardiovascular disease (CVD). Stratifying by active versus inactive person-time, we found a 14% increased risk for death from CVD (N = 78) and a 28% increased risk for death from ischemic heart disease (N = 55) for active workers who worked at smelters, although all confidence intervals include the null.
Conclusions: Higher peak and mean PM exposures occurred at smelting facilities compared to refining and fabrication facilities, lending support to the hypothesis that there is an exposure-response association between quantitative exposures to PM and CVD mortality.